DOCUMENT RESUME

ED 223 011 EC 150 311

AUTHOR Cohen, Libby; And Others
TITLE The Relationship between Language Disorders, Learning Disabilities, Verbal and Performance IQ Discrepancies and Measures of Language Abilities.
PUB DATE Apr 82
NOTE 18p.; Paper presented at the Annual International Convention of the Council for Exceptional Children (60th, Houston, TX, April 11-16, 1982 , Session F-2).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Elementary Secondary Education; Intelligence Quotient; *Language Handicaps; *Learning Disabilities; *Scores; *Screening Tests; *Testing; Testing Problems

ABSTRACT

The relationship between language disorders, learning disabilities, verbal and performance IQ discrepancies and six tests frequently used in screening language disordered children was examined with 95 students in grades 4-12 classified as learning disabled and/or language disabled. Ss were divided into three groups based on profiles from the Wechsler Intelligence Scale for Children-Revised and compared with Ss randomly selected from the non-learning disabled population. Results showed that the language disordered Ss had the greatest difficulty with tests that assess memory, attention, word retrieval, identification of antonyms, passive relationships, and sequencing. Cautions are offered about interpreting results when specific subtests are used to identify students with language disorders. (Author/CL)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED223011

The Relationship Between Language Disorders, Learning Disabilities, Verbal and Performance IQ Discrepancies and Measures of Language Abilities

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

by

Libby Cohen
University of Southern Maine
Gorham, Maine

Joanna Spruill
Cape Elizabeth High School
Cape Elizabeth, Maine

Virginia Hearns
Cape Elizabeth School Department
Cape Elizabeth, Maine

Paper Presented at the
Council for Exceptional Children International Conference
Houston, Texas
April, 1982

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Libby Cohen
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

EC150311

The Relationship Between Language Disorders,
Learning Disabilities, Verbal and Performance IQ Discrepancies
and Measures of Language Abilities

Abstract

This study investigated the relationship between language disorders, learning disabilities, verbal and performance IQ discrepancies and six tests that are frequently used in the screening of language disordered children. Subjects were divided into three groups based on WISC-R profiles and compared with subjects randomly selected from the non-learning disabled population. Results showed that the language disordered subjects had the most difficulty with tests that assess memory, attention, word retrieval, identification of antonyms, passive relationships, and sequencing.

The Relationship Between Language Disorders, Learning Disabilities, Verbal and Performance IQ Discrepancies and Measures of Language Abilities

Language disabilities have a widespread impact on learning disabled children (Wiig & Semel, 1980). Mattis (1978) has stated the language disordered children account for sixty-three percent of thoses labeled dyslexic Illebrum (1977) defines language disordered children as children who "fail to understand and/or produce a first language consistent with their mental age" (p. 21). Wiig and Semel (1980) have written that the "language disorder syndrome may be characterized by disorders of comprehension at the word and sentence levels, deficits in the immediate recall of spoken digits, words, sentences, and oral directions, and word finding problems and dysnomia (p. 9)." Children who are labeled language disordered during the preschool years may be labeled learning disabled when they perform poorly in school (Illebrum, 1977).

Discrepancies between Verbal Intelligence Quotient (VIQ) and Performance Intelligence Quotient (PIQ) on the Wechsler Intelligence Scale for Children, (WISC) and Wechsler Intelligence Scale for Children-Revised (WISC-R) have been the subject of a number of studies, (Rourke, 1973; Kaufman, 1976; Dudley-Marling, 1981). The diagnostic value of these discrepancies, particularly with language disabled students has received little attention. Several studies (Rourke, 1971; Richman, 1978) have demonstrated a relationship between VIQ-PIQ discrepancies on the WISC and selected abilities in children with language/learning disabilities. Kaufman (1981) in a review of the research on verbal performance (P-V) discrepancies suggests that future research focus on identifying characteristics of children with large P-V discrepancies. If this line of thinking is followed, information about language and learning

disabilities can be of assistance in diagnosis. This study investigated the relationship between language disorders, learning disabilities, VIQ-PIQ discrepancies and performance on six tests that are frequently used in the screening of language disordered children.

There are a number of commercially available tests and subtests that assess language. One criticism that has been made is that the amount of time for screening takes away from the time that could be used for assessment, remediation or consultation (Dodge, 1980). An extensive review of the literature on language screening methods revealed few studies (Prather, 1981; Wong, 1978; Findenbinder, 1973; Dodge, 1980; Lapointe, 1976). The present study examined six tests that are frequently used in the screening of language disordered children to see whether the amount of time used for screening could be reduced.

Method

Subjects: The cumulative records of all of the ninety-five (95) students in grades four to twelve classified as learning disabled and/or language disabled, were reviewed. Two categories of students emerged: students with at least a fifteen point discrepancy between VIQ and PIQ and students who had up to a five point discrepancy between VIQ and PIQ. The first category of students was separated into two groups: those having high verbal-low performance (HV-LP) profiles and those with high performance-low verbal (HP-LV) profiles. A fourth group of students was randomly selected from the non-learning disabled students in grades four to twelve.

There were nine(9) subjects in the HP-LV group, five (5) in the HV-LP group; seven (7) in the P-V group; and fourteen (14) in the non-disabled group. Where possible subjects were matched on age and sex. There were fifteen females and twenty males. All subjects fell within a full scale IQ range of 85-115 and an age

range of nine years to nineteen years of age. All subjects were administered all of the measures. Fifteen subjects were given a second WISC-R or WAIS. All of the subjects were from a predominantly middle to upper middle class, white community.

Instruments

Table 1 lists the six tests administered to all of the subjects. These instruments were chosen because they are commonly used in the diagnosis of language disorders. The Detroit Tests of Learning Aptitude (Baker, 1967) are composed of nineteen subtests which assess verbal, motor, perceptual and problem solving abilities. The test is inadequately standardized. The manual reports test-retest reliabilities of .68 and .96. The WISC-R (Wechsler, 1974) is one of the most widely used intelligence tests. It is highly reliable. Each of the IQ scales has a reliability coefficient of .89 or above. The Newcombe-Marshall Sentence Repetition Task (1967) contains twenty sentences. The score is the total number of sentences repeated correctly. Information regarding standardization is inadequate. The Wiig-Semel Test of Linguistic Concepts (1976) is an informal test that assesses knowledge of relationships by asking questions of respondents in five areas: comparative, passive, temporal, spatial, and familial. This test has not been standardized. DiSimoni (1978) has developed the Token Test for Children. The norms consist of means and standard deviations of various age and grade groups of children. Further standardization has not been done. The test assesses "subtle receptive language deficits." (p. 1). The test consists of five subtests in which the subjects are asked to point to or manipulate different colored shapes which are presented in increasing difficulty. The Goldman-Fristoe-Woodcock Auditory Memory Tests (1970) are part of the Goldman-Fristoe-Woodcock Auditory Skills Test Battery and are designed to measure short-term auditory memory. Respondents are asked to arrange a set of pictures after

listening to a sentence read on a tape recording. This test has been well normed. Reliabilities of .86 and .98 are reported.

It was expected that the HV-LP group would do better on those tests that assessed language abilities than would the HP-LV group. The HP-LV group was expected to perform better on tasks that involved motor and visual perceptual skills. The scores of the P-V group was expected to fall between these groups.

Results

Means and standard deviations for measures that were significant for the HV-LP, HP-LV, P-V and non-learning disabled groups are presented in Table 2. Significant F ratios were found on twelve of the measures. Three of the subtests of the Detroit Testing of Learning Aptitude were significant, with the HP-LV group having the lowest mean of the four groups: Verbal Opposites ($p<.01$), Unrelated words ($p<.02$), and Related Syllables ($p<.05$). Two of the Wiig-Semel subtests were also significant, with the HP-LV group having the lowest mean: Passive ($p<.04$) and Temporal ($p<.01$). The Newcombe-Marshall Sentence Repetition Task was also significant ($p<.05$), with the HP-LV obtaining the lowest mean.

Five sections of the WISC were also significant. Three of these had the lowest means for the VIQ-PIQ group: Arithmetic ($p<.002$), Picture Arrangement ($p<.02$), Verbal Scale (p .01). The Coding Subtest ($p<.002$) and the Performance Scale ($p<.01$) had lowest means for the HV-LP group.

Part 2 of the Token Test for Children was also significant ($p<.04$), the P-V group had the lowest mean.

Table 3 contains the means and standard deviations for measures that were significant when the HV-LP, HP-LV, P-V groups were combined and compared with the scores of the non-learning disabled group.

Significant F ratios were found for three subtests of the Detroit Tests of Learning Aptitude, with the lowest means obtained by the Disabled Combined

group on the Verbal Opposites ($p<.001$), Unrelated Words ($p<.01$), Oral Directions ($p<.02$) subtests. Five of the measures on the WISC were also significant, with the Disabled Combined group having the lowest means: Arithmetic ($p<.002$), Block Design ($p<.03$), Coding ($p<.02$), Verbal Scale ($p<.01$), and Full Scale ($p<.02$).

As expected, the mean scores of the HV-LP group were better on those subtests that assessed language ability. The mean scores of the HP-LV group, as expected were better than the HV-LP on tests that measured motor and visual perceptual skills. This is consistent with previous studies (Rourke, 1971, Rourke, 1973). The mean scores of the P-V group fell between HV-LP and HP-LV groups.

Discussion

The results support the contention that specific subtests are useful in identifying students with language disorders. However, these results should be interpreted with caution because of the high probability of significant differences occuring by chance when a large number of comparisons are carried out when the sample size is small. When the disabled subjects were combined, the Verbal Opposites, Unrelated Words and Oral Directions Subtests of the Detroit Tests of Learning Aptitude and the Arithmetic, Block Design, and Coding subtests and the Verbal and Performance Scales of the WISC-R differentiated the disabled from the non-disabled group.

When investigating specific test profiles, the HP-LV group was identified by low performance on the Verbal Opposites, Unrelated Words and Related Syllables subtests of the Detroit Tests of Learning Aptitude; Arithmetic subtests of the WISC-R; Passive and Temporal Subtests of the Wiig-Semel Test; and the Newcombe-Marshall Sentence Repetition Task. The HV-LP group was identified by low performance on the Coding subtest and on the Performance Scale of the WISC. The P-V group was characterized by low performance on the Picture Arrangement subtest and on the Verbal Scale of the WISC, and Part Two of the Token Test for Children.

This study has attempted to "work backwards" from a verbal-performance scale discrepancy to identify test profiles of the twenty-one disabled subjects. The HP-LV group had the most difficulty with subtests that involved word retrieval and identification of antonyms (Verbal Opposites); attention and short term memory (Unrelated words, Related Syllables, Arithmetic); passive relationships and sequencing (Wiig-Semel Test of Linguistic Concepts); and short term memory and attention (Newcombe-Marshall Sentence Repetition Task). In contrast, the HV-LP group encountered difficulty with visual/motor/perceptual tasks (Coding Subtest and the Performance Scale of the WISC). This was expected. The PIQ-VIQ group did poorer in only one area that involved visual perception (Picture Arrangement) and on tasks that required verbal skills(Verbal Scale of the WISC-R and Token Test for Children, Part 2).

Although there was some overlap among the groups, this was to be expected. Bryant (1967) did not find absolute differences among groups of language disordered students.

The Disabled Combined group presented a profile of mixed verbal and performance deficits. This group shared some of the characteristics of the HP-LV group: poor performance on Verbal Opposites and Unrelated Words Subtests of the Detroit and the Arithmetic subtest of the WISC. However, it was also characterized by poor performance on tasks that required visual/motor/perceptual skills (Oral Directions subtest of the Detroit; Block Design and Coding subtests of the WISC).

By examining the profiles of each group, it is possible to construct a tentative hypothesis of underlying deficits for each group. The HV-LP group appeared to have deficits in perceptual/motor tasks. The HP-LV appeared to have underlying deficits in memory, attention, word relationships and sequencing. The Disabled Combined group also shared and had difficulty with perceptual/motor

tasks. The HP-LV group had the most difficulty with subtests requiring the use of language. The group can tentatively be characterized as the language disordered group.

Several suggestions for further study can be made. Replication of this study should be made with subjects from varying socioeconomic, racial, and ethnic backgrounds to ensure generalizability to a wider population. If possible, the study should be made with a larger number of subjects. The small number of subjects in each group may have placed restrictions on the results. Results of such studies could lead to an efficient method of assessing language disabilities. Once underlying deficits are identified, the next step is to plan appropriate remediation. Finally, it would be essential to document the type of remediation provided and to study the effects of this remediation on test scores.

The authors gratefully acknowledge the support and assistance of Dr. Bruce Thurlow, Superintendent of Schools, Cape Elizabeth, Maine.

Table I

Tests and Subtests Administered to All Subjects

Detroit Test of Learning Aptitudes

- Verbal Absurdities
- Verbal Opposites
- Motor Speed
- Unrelated Words
- Free Association
- Designs
- Related Syllables
- Attention Span for Letters
- Disarranged Pictures
- Oral Directions
- Likenesses and Differences

Wechsler Intelligence Scale for Children

- Informatin
- Similarities
- Arithmetic
- Vocabulary
- Comprehension
- Picture Completion
- Picture Arrangement
- Block Design
- Object Assembly
- Coding
- Verbal Scale
- Performance Scale
- Full Scale

Wiig-Semel Test of Linguistic Concepts

- Comparative
- Passive
- Temporal
- Spatial
- Familial

Goldman-Fristoe-Woodcock Auditory Memory Test

Newcombe-Marshall Sentence Repetition Task

Token Test for Children

- Part 1
- Part 2
- Part 3
- Part 4
- Part 5

Table 2

Summary of Analyses of Variance Between HV-LP, HP-LV, P-V, and Non-LD Groups that were Significant (p. .05).

Subtest	Group	Mean	SD	F	p	N
Detroit Test of Learning Aptitude						
Verbal Opposites	HV-LP	46.33	4.04			3
	HP-LV	45.00	5.10			7
	P-V	50.40	10.24	4.56	.01	5
	N	59.67	11.41			15
Unrelated Words	HV-LP	45.67	4.93			3
	HP-LV	41.43	5.32			7
	P-V	47.60	6.91	3.95	.02	5
	N	51.07	6.52			15
Related Syllables	HV-LP	80.33	12.22			3
	HP-LV	55.86	15.41			7
	P-V	68.40	12.54	3.01	.05	5
	N	73.20	14.64			15
Wechsler Intelligence Scale for Children - Revised						
Arithmetic	HV-LP	9.00	2.92			5
	HP-LV	8.33	1.50			9
	P-V	7.57	1.99	5.93	.002	7
	N	11.29	2.33			14
Picture Arrangement	HV-LP	9.20	1.10			5
	HP-LV	11.78	2.86			9
	P-V	9.00	1.91	3.59	.02	7
	N	8.93	2.09			14

(Table 2 continued)

Subtest	Group	Mean	SD	F	p	N
Coding	HV-LP	7.00	2.55			5
	HP-LV	10.44	2.13	5.90	.002	9
	P-V	8.57	2.15			7
	N	12.29	3.27			14
Verbal Scale	HV-LP	102.00	11.66			5
	HP-LV	92.00	11.85	4.09	.01	9
	P-V	90.86	7.08			7
	N	105.79	12.58			14
Performance Scale	HV-LP	88.20	7.26			5
	HP-LV	105.22	12.47	4.38	.01	9
	P-V	97.71	6.55			7
	N	102.36	7.73			14
Wiig Semel Test of Linguistic Concepts						
Passive	HV-LP	9.67	.58			3
	HP-LV	7.67	1.86	3.25	.04	6
	P-V	8.60	.55			5
	N	9.22	.67			9
Temporal	HV-LP	8.67	.58			3
	HP-LV	6.83	1.83	4.74	.01	6
	P-V	9.20	.84			5
	N	8.78	.83			9
Newcombe - Marshall Sentence Repetition Task						
	HV-LP	15.00	2.94			4
	HP-LV	11.83	3.13	2.91	.05	6
	P-V	14.40	2.07			5
	N	15.07	1.87			15
Token Test for Children Part 2	HV-LP	n/a	n/a			n/a
	HP-LV	10.00	.00	4.5	.04	5
	P-V	9.00	.00			1
	N	9.83	.41			6

Table 3

Summary of Analyses of Variance Post-... (HP-LV, P-V) and Non-LD Groups that ... Disabled Combined(HV-LP, Significant (p. .05).

Subtest	Gr...	Mean	SD	F	p	N
Detroit Test of Learning Aptitude						
Verbal Opposites	Disabled	47.07	7.05	13.25	.001	15
	Combined N	59.67	11.41			15
Unrelated Words	Disabled	44.33	6.14	8.48	.01	15
	Combined N	51.07	6.52			15
Oral Directions	Disabled	10.93	4.82	5.84	.02	15
	Combined N	15.73	5.99			15
Wechsler Intelligence Scale for Children - Revised						
Arithmetic	Disabled	8.23	2.02	16.86	.002	21
	Combined N	11.29	2.33			14
Block Design	Disabled	9.48	1.81	5.04	.03	21
	Combined N	10.86	1.75			14
Coding	Disabled	9.00	2.55	11.13	.02	21
	Combined N	12.29	3.27			14
Verbal Scale	Disabled	94.00	10.94	8.65	.01	21
	Combined N	105.79	12.58			14
Full Scale	Disabled	95.81	10.32	6.16	.02	21
	Combined N	104.43	9.65			14

REFERENCES

Baker, H., and Leland, B. Detroit Tests of Learning Aptitude. Indianapolis, IN: Bobbs-Merrill Co., In. 1967.

Bryant, S. Evaluation of a dual deficit model of language deficits in learning disabled adolescents using factor analysis. Unpublished master's thesis, Boston University, 1967.

DiSimoni, F. Token Test for Children. Boston: Teaching Resources Corporation, 1978.

Dodge, G. A Comparison of Language Screening Methods. Language, Speech and Hearing Services, 1980, 11, 214-217

Dudley-Marling, C., Kaufman, N. and Tarver, S. WISC and WISC-R profiles of learning disabled children: A review Learning Disabilities Quarterly, 1981, 4, 307-319.

Dunn, L. Peabody Picture Vocabulary Test. Circle Pines, MN: American Guidance Service, 1959.

Finkenbinder, R. Descriptive Study of the Goldman-Fristoe-Woodcock Test of Auditory Discrimination and Selected Reading Variables with Primary School Children. Journal of Special Education, 1973, 7, 125-131.

Illerbrum, D. Diagnosis of Language Disorders in Children. Special Educators in Canada, 1977, 51, 21-25, 27.

Kaufman, A. Factor analysis of WISC-R at eleven age levels. Journal of Consulting and Clinical Psychologists, 1975, 43, 135-147.

Kaufman, A. Verbal Performance I.Q. Discrepencies of WISC-R. Journal of Cousulting and Clinical Psychology, 1976, Vol. 44, 739-744.

LaPointe, C. Token Test performances by learning disabled and achieving adolescents. British Journal of Disorders of Communication, 1976, 11, 121-133.

Mattis, S., French, J., and Raphy, I. Dyslexia in children and young adults: three independent neuropsychological syndromes. Developmental Medicine and Child Neurology. 1975, 17, 150-163.

Prather, E., and Brenner, A., and Hughes, K. A mini-screening language test for adolescents. Language Speech, and Hearing Services in the Schools, 1981, 12, 67-73.

Rourke, B., Dietrich, D. and Young, G. Significance of WISC verbal performance discrepancies for younger children with learning disabilities. Perceptual and Motor Skills, 1973, 36, 275-282.

Rourke, B., Young, G., and Flewelling, R. The relationship between WISC verbal-performance discrepancies and selected verbal, auditory-perceptual, visual-perceptual, and problem-solving abilities in children with learning disabilities. Journal of Clinical Psychology, 1971, 27, 475-479.

Wiig, E. and Semel, E. Language Disablilities in Children and Adolscents. Columbus OH: Merrill Publishing Co., 1976.

Wong, B. and Roadhouse, A. The test of language development (TOLD): A validation study. Learning Disabilities Quarterly, 1978, 1, 48-61.